

Common Core Mathematics  
Vertical Alignment by Cluster for Grades PK - 5

	PreK	K	1	2	3	4	5
<b>Measurement &amp; Data</b>							
<i>Describe &amp; compare measurable attributes</i>	<b>PK.MD.MA.1</b> Recognize the attributes of length, area, weight, and capacity of everyday objects using appropriate vocabulary (see p 20)	<b>K.MD.1</b> Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.					
	<b>PK.MD.MA.2</b> Compare the attributes of length & width for 2 objects including longer/shorter, same length; heavier/lighter, same weight; holds more//less; holds the same amount.	<b>K.MD.2</b> Directly compare 2 objects with a measurable attribute in common to see which object has "more of/less of" the attribute & describe the difference.					
<i>Classify Objects &amp; count the number of objects in each category</i>	<b>PK.MD.MA.3</b> Sort, categorize and count the number of objects by more than one attribute.						
<i>Measure lengths indirectly &amp; by iterating length units.</i>			<b>1.MD.1</b> Order three objects by length; compare the lengths of 2 objects indirectly by using a 3rd object.				
			<b>1.MD.2</b> Express the length of an object as a whole number of length units by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.				

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<b>Measurement &amp; Data</b>							
<i>Measure &amp; estimate lengths in standard units</i>				<div>2.MD.1 Measure the length of an object by selecting &amp; using appropriate tools.</div> <div>2.MD.2 Measure the length of an object twice, using length units of different lengths for the 2 measurements; describe how the 2 measurements relate to the size of the unit chosen.</div> <div>2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.</div> <div>2.MD.4 Measure to determine how much longer one object is than another, expressing the lengths difference in terms of a standard length unit.</div>			

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<b>Measurement &amp; Data</b>							
<i>Relate addition &amp; subtraction to a length</i>				<p><b>2.MD.5</b> Use addition &amp; subtraction within 100 to solve word problems involving lengths that are given in the same units eg by using drawings (such as drawings of rulers) &amp; equations with a symbol for the unknown number to represent the problem.</p> <p><b>2.MD.6</b> Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the number 0, 1, 2,... &amp; represent whole-number sums and differences within 100 on a number line diagram.</p>			
<i>Geometric measurement: understand concepts of area and relate area to multiplication and to addition</i>					<p><b>3.MD.5a/5b</b> Recognize area as an attribute of plane figures &amp; understand the concepts of area measurements ( p 37)</p> <p><b>3.MD.6</b> Measure areas by counting unit squares (square cm, square m, square in., square ft. &amp; improvised units)</p> <p><b>3.MD.7a/7b/7c/7d</b> Relate areas to the properties of multiplication &amp; addition (p 37)</p>		

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<b>Measurement &amp; Data</b>							
<i>Geometric measurement: recognize perimeter as an attribute of plane figures &amp; distinguish between linear &amp; area measures.</i>					<b>3.MD.8</b> Solve real-world and mathematical problems involving perimeters of polygons including finding the perimeter given the side lengths, finding an unknown side length & exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.		
<i>Geometric measurement: understand concepts of angle and measure angles.</i>						<b>4.MD.5a/5b</b> Recognize angles as geometric shapes that are formed wherever two rays share a common end point and understand concepts of angle measurements (p 42) <b>4.MD.6</b> Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. <b>4.MD.7</b> Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition & subtraction problems to find unknown angles on a diagram in real-world & mathematical problems (eg by using an equation with a symbol for the unknown angle measurement)	

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<i>Geometric measurement: understand concepts of volume &amp; relate volume to multiplication and to addition.</i>							<b>5.MD.3a/3b</b> Recognize volume as an attribute of solid figures & understand concepts of volume measurement ( p 47)
							<b>5.MD.4</b> Measure volumes by counting unit cubes using cubic cm, cubic in., cubic ft., & improvised units.
							<b>5.MD.5a/5b/5c</b> Relate volume to the operation of multiplication & addition & solve real-world & mathematical problems involving volume (p 47)
<i>Work with money</i>	<b>PK.MD.MA.4</b> Recognize that certain objects are coins & that dollars & coins represent money.		<b>1.MD.MA.5</b> Identify the values of all US coins; know their comparative values. Find equivalent values. Use appropriate notation. Use the value of coins in the solution of problems. (p 28)				
<i>Tell &amp; write time</i>			<b>1.MD.3</b> Tell and write time in hours and half-hours using analog & digital clocks.				

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<b>Measurement &amp; Data</b>							
<i>Work with time and money</i>				<p><b>2.MD.7</b> Tell &amp; write time from analog &amp; digital clocks to the nearest five minutes, using a.m. and p.m.</p> <p><b>2.MD.MA.7a</b> Know the relationships of time, including seconds in a minute, minutes in an hour, hours in a day, days in a week, a month, and a year, &amp; weeks in a month &amp; year</p> <p><b>2.MD.8</b> Solve word problems involving dollar bills, quarters, dimes, nickels, &amp; pennies using \$ and ¢ symbols appropriately.</p>			
<i>Solve problems involving measurement estimation of intervals of time, liquid volumes, and masses of objects.</i>					<p><b>3.MD.1</b> Tell &amp; write time to the nearest minute and measure time intervals in minutes. Solve problems involving addition &amp; subtraction of time intervals in minutes eg by representing the problem on a number line diagram.</p> <p><b>3.MD.2</b> Measure &amp; estimate liquid volumes &amp; masses of objects using standard units of grams, kilograms, &amp; liters. Add, subtract, multiply, or divide to solve 1-step word problems involving masses or volumes that are given in the same units (eg by using drawings to represent the problem) (p 36)</p>		

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<b>Measurement &amp; Data</b>							
<i>Solve problems involving measurement &amp; conversion of measurements from a larger unit to a smaller unit.</i>						<p><b>4.MD.1</b> Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb. oz.; l, ml.; hr., sec. Within a single system of measurement, express measurement in a larger unit in terms of a smaller unit. Record measurement equivalents in a 2-column table (p 42)</p> <p><b>4.MD.2</b> Use the 4 operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects &amp; money, including problems involving simple fractions or decimals &amp; problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p> <p><b>4.MD.3</b> Apply the area &amp; perimeter formulas for rectangles in real-world &amp; mathematical problems. (p. 42)</p>	

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<b>Measurement &amp; Data</b>							
<i>Convert like measurement units within a given measurement system</i>							<b>5.MD.1</b> Convert among different sized standard measurement units within a given measurement system and use these conversions in solving multi-step, real-world problems.
<i>Represent and interpret data.</i>			<b>1.MD.4</b> Organize, represent, interpret data with up to 3 categories; ask & answer questions about the total number of data points; how many in each category, and how many more or less are in one category than in another.	<b>2.MD.9</b> Generate measurement data by measuring lengths of several objects to the nearest whole unit or by making repeated measurements of the same object. Show the measurements by making a line plot where the horizontal scale is marked off in whole-number units.	<b>3.MD.3</b> Draw a scaled picture graph & a scaled bar graph to represent a data set with several categories. Solve 1- and 2-step "how many more" and "how many less" problems using information presented in scaled bar graphs (p 37)	<b>4.MD.4</b> Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Solve problems involving addition & subtraction of fractions by using information presented in line plots. (see p 42)	<b>5.MD.2</b> Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Use operations on fractions to solve problems involving information presented in line plots (see p 47)
				<b>2.MD.10</b> Draw a picture graph & a bar graph (with single-unit scale) to represent a data set with up to 4 categories. Solve simple put-together, take-apart, & compare problems using information presented in a bar graph.	<b>3.MD.4</b> Generate measurement data by measuring lengths using rulers marked with halves & fourths of an inch. Show the data by making a line plot where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.		